3 Points each:

1. Without calculating the values, predict which of the following reactions have a negative DS. (more than one MAY be correct)
   1. PCl5(s) 🡪 PCl3(l) + Cl2(g)
   2. CH4(g) + 2O2(g) 🡪 CO2(g) + 2H2O(l)
   3. Mg(s) + Cl2(g) 🡪 MgCl2(s)
   4. NH3NO3(s) 🡪 N2O(g) + 2H2O(g)
2. Using Appendix B or Wikipedia, calculate the DS at 25 degC of the reactions above that have a positive DS.
3. Calculate the DGo of reaction C above.
4. At what temperature is reaction A at equilibrium?
5. At 25 degC, the Ka for acid dissociation of aspirin (C9H8O4) is 3.0 x 10-4. Calculate the DGo for this acid dissociation.